

Lesson 11: While Loops

Objectives

You should be able to:

- Explain that a while loop continues to run while a boolean condition remains true.
- Translate a real-life activity with repeated components into a form that could be represented by a while loop.
- Analyze a while loop to determine if the initial condition will be met, how many times the loop will run, and if the loop will ever terminate.
- Write programs that use while loops in a variety of contexts.

Vocabulary

- Iterate - To repeat in order to achieve, or get closer to, a desired goal.
- while loop - a programming construct used to repeat a set of commands (loop) as long as (while) a boolean condition is true.

Introduced Code

- `while(){ // code }`

Lesson 12: Loops and Simulations

Objectives

You should be able to:

- Use a while loop in a program to repeatedly call a block of code.
- Use variables, iteration, and conditional logic within a loop to record the results of a repeated process.
- Identify instances where a simulation might be useful to learn more about real-world phenomena.
- Develop a simulation of a simple real-world phenomenon.

Vocabulary

- Models and Simulations - a program which replicates or mimics key features of a real world event in order to investigate its behavior without the cost, time, or danger of running an experiment in real life.

Lesson 13: Introduction to Arrays

Objectives

You should be able to:

- Identify an array as a data structure used to store lists of information in programs.
- Create arrays and access information stored within them using an index.
- Manipulate an array using the append, insert, and remove operations.
- Account for the fact that JavaScript arrays are zero-indexed when using them in a program.

Lesson 13: Introduction to Arrays (continued)

Vocabulary

- Array - A data structure in JavaScript used to represent a list.
- List - A generic term for a programming data structure that holds multiple items.

Introduced Code

- `removeItem(list, index)`
- `insertItem(list, index, item)`
- `list.length`
- `var list = ["a","b","d"];`
- `var x = [1,2,3,4];`
- `appendItem(list, item)`

Lesson 15: Processing Arrays

Objectives

You should be able to:

- Use a for loop in a program to implement an algorithm that processes all elements of an array.
- Write code that implements a linear search on an unsorted array of numbers.
- Write code to find the minimum value in an unsorted list of numbers.
- Explain how binary search is more efficient than linear search but can only be used on sorted lists.

Vocabulary

- for loop - A typical looping construct designed to make it easy to repeat a section of code using a counter variable. The for loop combines the creation of a variable, a boolean looping condition, and an update to the variable in one statement.

Introduced Code

- `for(var i=0; i<4; i++){ //code }`
- `function myFunction(n){ //code }`

Lesson 16: Functions with Return Values

Vocabulary

- Return Value - A value sent back by a function to the place in the code where the function was called from - typically asking for value (e.g. `getText(id)`) or the result of a calculation or computation of some kind. Most programming languages have many built-in functions that return values, but you can also write your own.

Introduced Code

- `return`